

EFFECTIVENESS AND IMPACT OF THE CORPORATE AVERAGE FUEL
ECONOMY (CAFE) STANDARDS

Statement of

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Good afternoon, Mr. Chairman and members of the Committee. I am Paul R. Portney, President of Resources for the Future. In 2001 I served as Chair of the Committee on Effectiveness and Impact of the Corporate Average Fuel Economy (CAFE) Standards of the National Research Council (NRC). The Research Council is the operating arm of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine, chartered by Congress in 1863 to advise the government on matters of science and technology. My comments today reflect my own views and, to the best of my abilities, those of the NRC committee members. They do not reflect the views of Resources for the Future, an independent and non-partisan research organization that takes no institutional positions on legislative matters.

It is a pleasure to be here to discuss with you the NRC's 2001 report. This study was requested by Congress to provide assistance in its decisions related to fuel economy standards. I would like to provide a brief overview of the report, while noting that it was detailed and cannot be done justice to in a few minutes. Therefore I request that we include the Executive Summary of that report as part of the record. Following my overview of the 2001 report, I will make a few remarks about developments in the three-and-a-half years since the committee did its work. Let me say here, as I will again later, that I will *not* be speaking for the committee in offering this update.

The NRC committee had a 3-part mission in 2001 when it did its work:

1. Determine the effect that CAFE standards have had on fuel economy, and their impact on the industry, consumers, safety, and other issues;
2. Estimate the impact that changes to CAFE standards might have in the future; and
3. Evaluate the structure of the CAFE program and recommend potential improvements.

Review of the Then-Current CAFE Program

Our review of the impacts of CAFE standards through mid-2001 convinced us that the program had significantly reduced fuel consumption. Other factors also have been important, especially the reaction of consumers and the automotive industry to higher fuel prices in the 1970s and early 1980s. The committee could not apportion responsibility among these factors, but noted that CAFE was clearly important. In the years since the early- to mid-1980s, CAFE indisputably played an important role in maintaining higher fuel economy than otherwise would have resulted, especially during periods when gasoline prices were much lower than those prevailing today.

There have been adverse consequences associated with the CAFE program as well. Safety is most important. The majority of the committee concluded in 2001 that the downsizing and downweighting that occurred in the late 1970s and 1980s (partially in response to CAFE) resulted in an additional 1,300 to 2,600 fatalities in 1993. While fatalities were declining in this period, most committee members believe that they would have declined this much more had the downweighting and downsizing not occurred. Two

members of the committee dissented from this view. They believed that the data did not support this conclusion, and that the net effect on highway fatalities of the increases in fuel economy may have been zero.

An additional impact, although one we were unable to quantify, had to do with restrictions on consumer choice. Requiring automotive manufacturers to focus on fuel economy diverted their resources from improving other attributes valued by consumers, such as acceleration and carrying capacity.

Impact of Higher Standards

First let me note that the committee did not recommend whether or by how much the government should tighten the current fuel economy standards. We believed that is a decision belonging to Congress, the President, and appointed officials because it involves tradeoffs among factors very important to the people of this country—the costs of driving, the environment, national security, consumer choice, safety, and others. In so far as possible, the committee identified these tradeoffs, but a full analysis was not possible within the short time allotted to this study.

The committee believed that it is incumbent on decisionmakers to understand the benefits of fuel economy improvements and to ensure that the costs associated with these improvements don't outweigh the benefits. The two main benefits the committee considered were the macroeconomic gains associated with reduced exposure to fluctuating world oil markets and reduced emissions of the greenhouse gases that may be

linked to global climate change. Analysts have assigned a wide variety of values to reducing these externalities. The committee considered this range and ultimately chose values which, in total, are equivalent to about 30 cents/gallon of fuel. That is, each gallon of gasoline consumed has adverse economic and environmental consequences that, when combined, amount to as much as \$0.30. I mention this figure not because the committee endorsed it (indeed other analysts might chose values much higher or lower), but because it helps to understand how hard one can push on fuel economy.

With that as context, the committee concluded that significant improvements in fuel economy are quite possible at reasonable cost. A variety of technologies to improve fuel economy are available for cars and light trucks. Many have been developed and are being implemented in Europe and Japan where fuel prices are much higher than here. Specifically, Variable Valve Lift and Timing can reduce fuel consumption by 3-8%. Continuously variable transmissions can achieve another 4-8%. Other technologies are under development and will be available for wide scale use within 15 years. Fuel economy can be raised more for heavier vehicles than for light ones, and the resulting fuel savings will be much higher for the heavier vehicles as well. For example, the fuel economy of a midsize SUV could be improved by 34% (from 21 to 28 miles per gallon). Over the lifetime of the vehicle, these improvements would save nearly 2000 gallons, which would more than pay for their incremental cost.

As with the current CAFE program, raising standards will have other consequences as well, with safety again being the most contentious. Any increase in

fatalities will depend on how manufacturers meet higher standards. While the technologies examined by the committee generally appear to be more cost-effective than weight reduction, CAFE standards, as currently structured, do not preclude any methods. Thus some manufacturers might include some weight reduction, which the majority of the committee believed could involve some safety consequences. However, it is also possible that weight reductions could be concentrated in the heavier vehicles. This would reduce the weight disparity in the fleet, which could have beneficial consequences for safety. This could occur because the greater risk for the occupants of the downsized vehicles would be more than balanced by the lessened risk for other road users.

A key point to make here is that the committee felt strongly that automakers must be given sufficient time to accommodate more stringent fuel economy standards. The less time they are given to meet new requirements, especially significantly more stringent ones, the more likely it is that they will respond not through the introduction of fuel-saving technologies but rather through down-weighting and/or down-sizing. This could have adverse consequences for safety.

Recommendations on the Structure of the CAFE Program

First, it was the committee's view that there is a marked inconsistency between raising fuel economy standards while keeping fuel taxes low. The committee certainly did not recommend raising taxes to the level of European countries (or to any specific level for that matter), but the members believed strongly that efforts to raise fuel economy would work much better if consumers had more motivation from higher fuel prices. Since the 2001 report was written, gasoline prices in the United States have risen

roughly 20 percent. If consumers perceive this increase to be permanent, it will begin to affect their new-vehicle purchases. In fact, there is some anecdotal evidence to suggest that it already has.

The committee recommended that a tradable credit program be part of any regulatory program on fuel economy. Even if the current structure of CAFE is maintained and the standards not raised, the program can be made more efficient and effective with tradable credits. All manufacturers would have incentive to raise the economy of all their vehicles, and the results are likely to be less costly than the current approach of treating each manufacturer and each vehicle segment separately. Tradable credits have worked well in reducing the costs of sulfur dioxide emissions from coal-fired power plants, and the committee believes they will work as well on fuel economy.

Finally, the committee recommended that consideration be given to modifying the current structure of the CAFE program in such a way that the applicable fuel economy standards for varying types of vehicles depend at least in part on their attributes—that is, their weight, interior size, or some combination of characteristics. I would note that the National Highway Traffic Safety Administration is giving thought to this approach now. The committee also recommended the elimination of both the two-fleet rule that distinguishes between the domestic and foreign “content” of vehicles and the granting of extra fuel economy credits for the production of dual-fuel vehicles.

Update

Three and a half years have passed since the NRC committee on CAFE did its work. I thought it might be useful for me to reflect on developments since August of 2001 and what they might mean for the fuel economy debate. It should be clear that I am speaking for myself here and not for the members of the NRC committee.

The CAFE committee issued its report about a month before the horrific events of September 11, 2001. Those events and their ongoing aftermath have made us think much more seriously than before about the consequences of U.S. oil consumption and our growing dependence for imported oil on nations that are unstable and/or may bear us ill will. Were the 2001 NRC committee meeting today, its members might assign an even larger value to reducing oil consumption so as to reduce our economic vulnerability to oil price shocks, either accidental or deliberate.

Next, oil prices have risen considerably since the time of the 2001 report, principally a reflection of rapidly growing demand for oil in the developing world (especially China and India), coupled with slower growth in production. If sustained, these higher prices will act as a stimulus to the production of more fuel-efficient vehicles, for the simple reason that people will demand better fuel economy. However, the externalities associated with oil consumption and its effect on both the economy and the environment would still justify government intervention to further improve fuel economy.

Third, in its deliberations on new technologies that might be used to improve future fuel economy, the 2001 NRC committee gave little consideration to either

gasoline-electric hybrids or diesel-powered passenger cars and light-duty trucks. The former, the committee felt, were too expensive to make a significant difference in fleetwide fuel economy over the next ten to fifteen years, while the latter faced stiff challenges related to vehicle emissions standards for both oxides of nitrogen and also fine particulate matter.

We may have been too conservative in both these assessments. Hybrid vehicle sales have grown faster than anyone expected--to 86,000 in the U.S. in 2004. According to industry experts, hybrid sales could amount to 400,000-500,000 by the 2008-09 model year, with significant penetration in both the passenger car and light-duty truck segments of the market. Similarly, considerable progress is being made in the development of much cleaner diesel engines; this is important because diesel-powered vehicles get 30 percent better fuel economy than conventional internal combustion gasoline engines. If the cost penalty associated with hybrids falls significantly because of larger-than-expected volumes, and if carmakers find a way to produce diesel engines that are capable of meeting tougher emissions standards in California and the rest of the U.S. for the lifetime of vehicles, things could be different. That is, it might be possible to meet more stringent fuel economy standards at lower costs for less than the committee foresaw in 2001. Once again, this is speculation on my part alone; this view should not be attributed to the 2001 committee.

Finally, looking back on our 2001 report, I wish we had had the time to pay closer attention to the so-called "rebound effect" (this refers to the additional miles motorists may drive in vehicles that get better fuel economy). Some recent research by my colleagues at Resources for the Future suggests that the negative consequences resulting

from the added congestion, air pollution and accident risks could cancel out the beneficial economic and environmental effects of improved fuel economy, depending on how all these effects are valued. I take responsibility for having given this important issue less attention than I believe it deserves, and I urge the committee to consider it in future deliberations over the CAFE program.

Thank you, Mr. Chairman and members of the House Science Committee. That concludes my prepared remarks. I would be happy to answer any questions you have.